EXPT: 5 DEVELOP A SIMPLE CALCULATOR USING XML-RPC

Introduction:

An XML-RPC calculator exposes arithmetic functions (add, sub, mul, div, pow) over HTTP so a client can call them remotely using the XML-RPC protocol.

Aim:

Build a simple XML-RPC server that provides calculator functions and a client that calls them.

Algorithm:

1. Create an XML-RPC server that registers calculator functions.
2. Start the server on localhost and a chosen port.
3. Client connects to server URL and calls functions with arguments.
4. Server executes the function and returns result. Client prints it.

Code:

Server:

```
from xmlrpc.server import SimpleXMLRPCServer

def add(a,b):
    return a+b

def sub(a,b):
    return a-b

def mul(a,b):
```

1. Create an XML-RPC server that registers calculator functions.
2. Start the server on localhost and a chosen port.
3. Client connects to server URL and calls functions with arguments.
4. Server executes the function and returns result. Client prints it.

Code:

Server:

```python
from xmlrpc.server import SimpleXMLRPCServer

def add(a,b):
    return a+b

def sub(a,b):
    return a-b

def mul(a,b):
    return a*b

def div(a,b):
    return a/b

def mod(a,b):
    return a%b

server=SimpleXMLRPCServer(("localhost",8000))
print("Listening on port 8000...")
server.register_function(add,"add")
server.register_function(sub,"sub")
server.register_function(mul,"mul")
server.register_function(div,"div")
server.register_function(mod,"mod")
server.serve_forever()
```

Client:

```python
import xmlrpc.client

proxy=xmlrpc.client.ServerProxy("http://localhost:8000/")

for i in range(5):

    a=int(input("Enter a number:"))

    b=int(input("Enter b number:"))

    print("addition of given number is %d "%((proxy.add(a,b))))

    print("sub of given number is %d "%((proxy.sub(a,b))))

    print("multiplication of given number is %d "%((proxy.mul(a,b))))

    print("division of given number is %d "%((proxy.div(a,b))))

    print("mod of given number is %d "%((proxy.mod(a,b))))
```
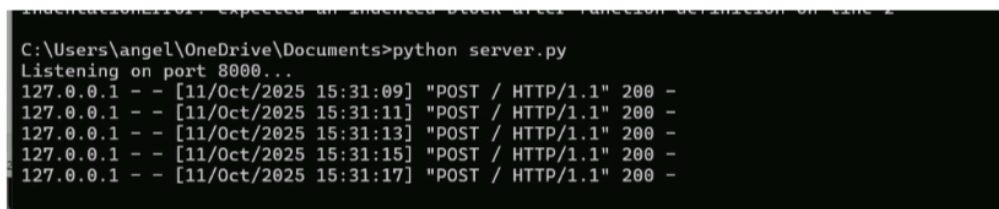
Output:

Server:

```
IndentationError: expected an indented block after function definition on line 2
C:\Users\angel\OneDrive\Documents>python server.py
Listening on port 8000...
127.0.0.1 - - [11/Oct/2025 15:31:09] "POST / HTTP/1.1" 200 -
127.0.0.1 - - [11/Oct/2025 15:31:11] "POST / HTTP/1.1" 200 -
127.0.0.1 - - [11/Oct/2025 15:31:13] "POST / HTTP/1.1" 200 -
127.0.0.1 - - [11/Oct/2025 15:31:15] "POST / HTTP/1.1" 200 -
127.0.0.1 - - [11/Oct/2025 15:31:17] "POST / HTTP/1.1" 200 -
```
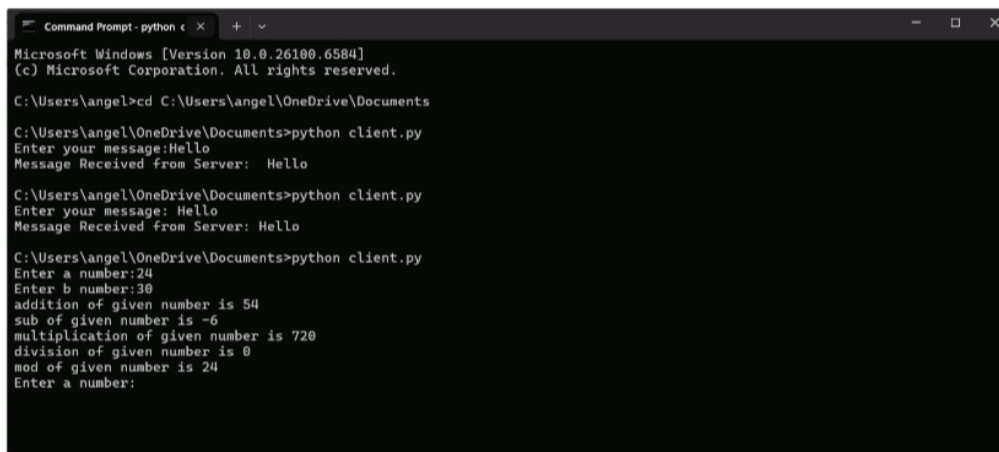
Client:

```
Command Prompt - python c ×    + ∨                                        —  □  ×
Microsoft Windows [Version 10.0.26100.6584]
(c) Microsoft Corporation. All rights reserved.

C:\Users\angel>cd C:\Users\angel\OneDrive\Documents

C:\Users\angel\OneDrive\Documents>python client.py
Enter your message:Hello
Message Received from Server:   Hello

C:\Users\angel\OneDrive\Documents>python client.py
Enter your message: Hello
Message Received from Server: Hello

C:\Users\angel\OneDrive\Documents>python client.py
Enter a number:24
Enter b number:30
addition of given number is 54
sub of given number is -6
multiplication of given number is 720
division of given number is 0
mod of given number is 24
Enter a number:
```

Result:

The XML-RPC calculator server successfully provided remote arithmetic functions. The client connected to the server and received correct results for addition, subtraction, multiplication, division, and modulo.